

REMARKS

Applicants request suspension of action by the Patent Office until at least October 27, 2009, which does not exceed three months from the filing of the attached RCE, in accordance with 37 C.F.R. § 1.103(c). After the temporary suspension, favorable reconsideration of this application is respectfully requested in light of the following remarks.

The July 20, 2009 Advisory Action indicates that the Amendment filed June 22, 2009 has been entered.

By this Amendment, Claims 20 and 21 are added. Thus, Claims 1, 4-11, 20 and 21 are pending in this application. Claims 1 and 11 are independent. Claim 11 has been withdrawn by the Examiner. Thus, Claim 1 is the only independent claim under consideration. Support for Claims 20-22 can be found, for example, in the paragraph beginning after Table 1 on page 9 of the specification. No new matter is added.

The July 20, 2009 Advisory Action indicates that the rejection of Claims 1 and 4-10 under 35 U.S.C. §112, first paragraph, discussed in the January 26, 2009 Official Action, has been overcome by the Amendment filed June 22, 2009.

The Advisory Action maintains the rejection of Claims 1 and 4-10 under 35 U.S.C. §103(a) over U.S. Patent No. 6,253,988 to Pereira in view of U.S. Patent No. 6,184,475 to Kitajima et al. ("Kitajima") or U.S. Patent No. 5,368,814 to Gonya et al. ("Gonya"). Applicant continues to traverse this rejection.

Independent Claim 1 recites a vehicular glazing panel comprising, *inter alia*, a lead-free solder including tin in an amount that is less than 50% by weight and a mechanical stress modifier, which inhibits the occurrence of a stress fault in the pane of glass in the region of the solder, in the form of bismuth metal or antimony metal.

The January 26, 2009 Official Action acknowledges that Pereira fails to disclose a solder composition having antimony or bismuth as a stress modifier, but takes the position that such a solder composition is disclosed by each of Kitajima and Gonya. Kitajima discloses a lead-free solder composition comprising tin at about 34% by weight and bismuth at about 46% by weight (see Fig. 1 and col. 9, line 64 to col. 10, line 1). Kitajima also discloses antimony as an optional element (see Abstract). Gonya discloses a lead-free solder alloy comprising tin at 42-48% by weight and bismuth at 48-56% by weight (see col. 3, lines 60-63).

The January 26, 2009 Official Action states that it would have been obvious to substitute either composition disclosed by Kitajima or Gonya for Pereira's solder composition to result in the glazing panel defined in independent Claim 1 here. Applicants respectfully disagree.

Pereira discloses a low temperature solder composition for soldering to glass (see col. 1, lines 25-28 of Pereira). Pereira's solder composition has a considerably lower melting temperature than solder compositions conventionally used for soldering to glass (see col. 1, lines 25-28 of Pereira). One reason Pereira's solder has a "low temperature" composition is Pereira's recognition that the higher melting point of conventional solders results in a heat flow to glass windshields that damages the glass in regions near the solder joint by, for example, causing cracking. This is discussed in Pereira's disclosure at col. 1, lines 18-22. Thus, Pereira's solder composition is specifically selected to have a relatively low melting point so that heat flow to a glass windshield will not crack or otherwise damage the glass.

Pereira discusses at col. 2, lines 40-42 of the disclosure that the low melting temperature of the solder composition is achieved by the particular elements present and the relative amounts of those elements within the solder composition. In this

regard, Pereira's solder composition contains antimony in the amount of 0.75% by weight as a *maximum* amount, and bismuth in the amount of 0.25% by weight as a *maximum* amount (see col. 2, lines 45-65). In the passage from col. 2, line 45 to col. 3, line 2 of the disclosure, Pereira states that increasing these specific amounts will adversely effect the material properties of the solder composition, i.e., the low melting temperature of the solder composition. Thus, one skilled in the art reading Pereira's disclosure would recognize that substituting Pereira's solder composition with either of the compositions disclosed by Kitajima and Gonya, each of which includes bismuth in an amount much greater than the *maximum* 0.25% by weight allowed by Pereira as discussed above, would adversely effect the material properties of Pereira's solder composition as discussed by Pereira at col. 2, line 45 to col. 3, line 2. Accordingly, the modification stated by the Official Action would render Pereira's solder unsatisfactory for its intended purpose (MPEP §2143.01(V)). Thus, the solder compositions of Kitajima and Gonya are not suitable "alternatives" to Pereira's solder composition and are not "functional equivalents" of Pereira's solder composition as suggested in the final paragraph on page 4 of the Official Action.

The Advisory Action takes the position that the arguments above constitute attorney opinions unsupported by evidence on the record. That is not correct.

Pereira emphasizes at numerous places the importance of providing a low melting temperature of solder. For example, the Background portion of Pereira discusses the 193°C melting point of a typical solder used to solder electrical connections in vehicle windows, and explains how solder having such a high melting temperature can damage the glass. Pereira emphasizes in the discussion beginning in line 24 of column 1 that the disclosed solder composition possesses a

considerably lower melting temperature than a typical solder so that the glass is not likely to be damaged. Pereira later describes beginning in line 40 of column 2 that the low melting temperature solder is produced by virtue of the particular elements in the solder and the relative amounts of those elements within the solder. In this regard, Pereira states that the solder composition can contain trace amounts of, for example, antimony and bismuth.

It is thus apparent from Pereira's own disclosure that the patent is specifically concerned with providing a low melting temperature solder. Pereira also makes clear that the ability to achieve the desired objective of a low melting temperature solder hinges on two factors -- the particular composition of elements and the relative amounts of elements forming the solder. This is not a matter of attorney opinion or argument. Quite the contrary, this is what the reference itself says.

Both Gonya and Kitajima disclose solder compositions having a very large wt. % bismuth -- Gonya discloses 48-56 wt. % bismuth as discussed in lines 60-63 of column 3, while Kitajima specifically envisions the use of a similarly significant amount of bismuth. Indeed, the Official Action refers to the first solder composition listed in the Table of Fig. 1 of Kitajima -- a composition that contains 58 wt. % bismuth.

The disclosures in Gonya and Kitajima clearly contemplate amounts of bismuth far exceeding the "trace amounts" of bismuth described in Pereira. For this reason, a person of ordinary skill in the art would not consider using Gonya's and/or Kitajima's solder composition as a substitute for Pereira's solder composition. Pereira emphasizes that the amount of each element in the solder composition affects the low melting temperature solder, and then goes on to observe that the solder can include trace amounts of bismuth, specifically 0.250% bismuth maximum.

The disclosures in Gonya and Kitajima of solder compositions having a minimum bismuth content of 48 wt. % is well beyond the trace amount contemplated by Pereira.

This argument need not be supported by a Declaration or Affidavit. The argument is straightforward and logically based on what the references themselves disclose. To date, these arguments have not been substantively addressed. The Examiner is kindly asked to explain why an ordinarily skilled artisan would modify Pereira's solder composition to include 48-56 wt. % bismuth as disclosed in Gonya or 58 wt. % bismuth as described in Kitajima, notwithstanding Pereira's disclosure of using only trace amounts of bismuth so as not to adversely affect the desired low melting temperature characteristics of the solder.

In addition, one skilled in the art would not have found it obvious to use either of the compositions disclosed by Kitajima and Gonya in place of Pereira's low temperature solder composition for other reasons. The Advisory Action states that one skilled in the art would have found it obvious to use the solder composition of either Kitajima or Gonya in place of Pereira's solder composition because all three references involve connecting conductive materials to substrates. Although Kitajima and Gonya discuss soldering components to substrates, neither is particularly pertinent to the particular problem with which Pereira is concerned. Pereira is concerned with soldering components to glass substrates such as windows and windshields (see col. 1, lines 25-28 of Pereira). In particular, Pereira's solder composition is specifically selected to have a relatively low melting point so that heat flow to the glass will not damage the glass, as discussed above. In contrast, Kitajima and Gonya disclose soldering microelectronics to printed circuit boards. Kitajima and Gonya do not contemplate soldering to glass substrates, and therefore

would not have commended themselves to the attention of one skilled in the art in considering the problems associated with soldering to glass. That is, Kitajima and Gonya are not concerned with heat flow damage to windshield glass or stress faults that arise when soldering components to glass substrates. Indeed, each of solder compositions disclosed by Kitajima and Gonya would exacerbate the problems with which Pereira is concerned as discussed above. The Office Action fails to consider the references and claims as a whole and relies on impermissible hindsight using knowledge gleaned only from Applicants' disclosure (see MPEP §2145(X)(A)).

In view of the above, Claim 1 is patentable over the combination of Pereira and Kitajima or Gonya.

Claims 4-10 are patentable over the applied references at least by virtue of their dependence from patentable independent Claim 1. Thus, a detailed discussion of the additional distinguishing features recited in these dependent claims is not set forth at this time. Withdrawal of the rejection is respectfully requested.

Claims 20 and 21 are presented for consideration and recite that the lead-free solder includes bismuth metal in an amount much greater than the 0.25% *maximum* disclosed by Pereira. Moreover, one skilled in the art would not have found it obvious to modify Pereira based on the disclosures of Kitajima or Gonya for at least the reasons discussed above. Thus, Claims 20 and 21 are patentable over the applied references for at least these reasons, as well as by virtue of their dependence from patentable independent Claim 1.

Should any questions arise in connection with this application or should the Examiner believe that a telephone conference with the undersigned would be helpful in resolving any remaining issues pertaining to this application the undersigned respectfully requests that he be contacted at the number indicated below.

Respectfully submitted,

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